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Towards A Unified View of Communication Factors in Telework

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Abstract

The dominance of face-to-face communication is changing as organizations adopt more and more distributed work arrangements such as telework. Communication patterns are different in the telework environment as teleworkers have fewer opportunities for face-to-face interaction and therefore rely on other communication media. Hence, in the teleworking environment, communication media is very important, as most of the time teleworkers and managers depend on the communication systems in coordination, supervision, and reporting of work. Therefore, understanding the communication media usage and selection in telework is important in numerous ways to improve the organizational effectiveness and productivity. However, the current research critically lacks identification and study of factors behind communication in telework. In this study we propose a taxonomy of communication in telework and using this taxonomy we listed some important research issues as future research.

Keywords: Telework, Organizational Communication, Communication taxonomy, and Media choice

1. Introduction

Effective and efficient communication is key to an organization's success. To achieve this, links are needed throughout the organization so that management can communicate the company's vision and goals to the employees and integrate all organizational activities. Information sharing is a critical function in organizations because it is through the sharing of information, workers and managers respond to the opportunities and threats that exist within and outside the organization (Rayport and Sviokla, 1995). Organizational Managers spend more than eighty percent of their valuable time in communication (Daft and Lengel, 1984; Panko, 1992). Hence, communication effectiveness plays a major role in management effectiveness and its performance. Organizational members communicate with each other to carry out organizational activities, whether they are in the same location or in different locations. They can choose from different kinds of communication media such as face-to-face, telephone, e-mail, fax, teleconferencing, etc., depending on the communication needs.

Moving away from the mass production to product customization with the development and the diffusion of new advanced information technologies as well as globalization and turbulence in environment have increased the competition among organizations. Globalization has increased the number of competitors, and requires firms to develop strategies aimed at meeting the requirement of their various markets (Lovelok and Yip, 1996). This has dramatically increased the number of factors that managers must consider when making decisions. These shifting alignments will create both competitive challenges and opportunities for managers and policymakers. Organizational leaders recognized that the traditional organizational structure could not survive in the future economic waters unless

major changes were made. Therefore, in recent years many organizations have started adopting a new work-style called telework where employees work from remote locations (Dennis and Kinney, 1998).

Video, audio, and computer technology are converging properties of face-to-face and computer-mediated communication, enabling organizations to choose their own degree of media richness embedded in the information technology (Sillince, 1997). The dominance of face-to-face communication is changing as organizations adopt more and more distributed work arrangements (Dennis and Kinney, 1998). Communication patterns are different in the telework environment and teleworkers have fewer opportunities for face-to-face interactions and instead must use other communication media. Nakamura et al. (1995) found that workers at distributed offices want more communication than those at the main office. Further, complexity, uncertainty, and equivocality in today's business environment require frequent communication and use of rich communication. Therefore, telework organizations with distributed workers require new communication methods to facilitate teleworkers interaction. According to Bui et al. (1996), through a combination of information technology, teleworkers can be provided with a satisfactory level of communication. They suggest that through IT, it is possible to provide solutions to many of the problems that arise from working remotely.

There has been very little research done in telework settings to study how best IT can be used to support teleworkers' communication. The current research critically lacks identification and study of factors of teleworkers media choice. In this paper we propose a communication taxonomy, which shows the influential factors of media choice in telework. Based on this taxonomy we propose some organizational changes for better implementation of communication support in telework and few important research topics to direct future IT and telework related research.

2. IT and Organizational Communication

Work activities must be linked together in order to perform well, and communication is the tool for linking those work activities (Fritz et al., 1998). Communication between workers, and between workers and management occur through different media depending on the communication task. Studies have indicated that organizational members who do not have frequent interactions with colleagues may become dissatisfied (Karathanos and Pettypool, 1992) thereby reducing organizational performance. However, the basic assumption of modern organizational theory, which emphasizes the need of physical proximity of people for coordination and supervision, has been changed through information technology (Lucas, 1994). In the present business world, IT is an enabler and facilitator of organizations. It links all geographically distributed organizational units and members, and provides access to vast amount of information, which is updated from various independent nodes. Without the existence of IT, the implementation of network type organization is very unlikely (Jarvenpaa and Ives, 1994).

Leavitt and Wiserler (1958) made many predictions about the form and shape of management in the 1980s. Their predictions about IT have been realized (Applegate et al., 1988). Previous organizational communication had been limited to few media, such as face-to-face, telephone, fax, and paper. However, with the advancement of IT, organization members can choose from a variety of communication media such as, face-to-face, telephone, fax, email, tele-conference, etc

Organizations are undergoing structural changes and IT supported communication plays a major role in this process. The use of multiple media creates challenges to the traditional organizational structure. IT gives workers and managers options they have not had in the past. For example, tele-conference allows the transmission of multiple communication cues similar to face-to-face communication allowing richer communication in decision making teams with geographically distributed members. Electronic media supports all forms of communication methods (e.g., one-to-one, one-to-many, and many-to-many) whereas face-to-face communication supports only one-to-one or one-to-few communication. When users are allowed to be anonymous, computer mediated communication become liberal and very active compared to face-to-face communication, which tends to have a strong social influence factor. However, electronically mediated communication too can have formal and tacit rules depending on the organizational structure and the organizational communication policies. Although these electronic communication media have increased media richness, it is unlikely that they will be able to substitute for face-to-face communication entirely, making it necessary to have face-to-face interaction among members (Anand et al., 1998). Therefore, further research and development are necessary to study how and what part of face-to-face communication to substitute with IT in telework.

3. Related work

Information Technology has been identified as one of the influential factors of telework adoption and diffusion. Use of IT to access electronic communication channels is necessary as teleworkers substitute electronic communication with co-workers for face-to-face communication (Fritz et al., 1998). However, research on the implication of IT in telework communication is very limited.

The study by Nakamura et al. (1995) analyzed the characteristics of different communication media and organizational and personal characteristics in remote work settings. Their study based on two distributed software development teams at remote local offices in Japan suggest that even the most sophisticated IT such as video-conferencing cannot replace face-to-face communication, when highly complex communication tasks such as persuasion/negotiation are involved. Their study found that workers at distributed offices are dissatisfied due to lack of information and suggests that workers at distributed offices need more communication compared to central office workers. They also found that not only formal communication but also informal communication among members are important in distributed work settings. Ide et al. (1996) who used the same site for their study found some contradictory results with Nakamura et al. Their results suggest that social influence is more important in media selection than richness of the media itself for distributed workers. Study conducted at, NTT's (Japan's telecommunication giant) satellite offices indicates that distributed workers are reluctant to use sophisticated communication media such as teleconferencing and Tele-Eye, and instead used more familiar communication media (Shibutani and Hasegawa, 1993). The study by Shin et al. (1998) investigated the teleworkers' media choice behavior and the impact of communication media on the effectiveness of telework using two distributed work groups at Fujitsu Kyushu Communication Systems Limited in Japan. Their study found that though telephone is more suitable for urgent communication tasks, email could also be effectively used for the communication that needs immediate feedback and intensive interaction. This study also found that there is a strong impact of social influence on media use, especially management support on media choice of teleworkers. Gupta et al. (1995) studied the communication problems faced by telecommuters and telecommunication technologies' potential to support those problems. Their findings indicate that there are

differences in problems and abilities of communication technologies based on business situation and the location of business. Their study has also found that telecommunication problems are negatively correlated with the telecommuters' effectiveness, and abilities are positively correlated with firms' performance.

4. Taxonomy of telework communication

Most of the organizational decision-making faces ambiguous and uncertain situations. Organizational decision-making process goes beyond individuals, and it needs information sharing among managers and workers. Therefore, for better organizational decision making, organizations must have information exchange mechanism capable of coping with those ambiguous and uncertain situations in the unstructured environment. In traditional organizations, most of the time face-to-face is used to cope with the ambiguous and uncertain situations. However, in telework settings, as there are fewer chances for face-to-face communication, teleworkers have to select the media that can be used in order to reduce ambiguity and uncertainty of the job task.

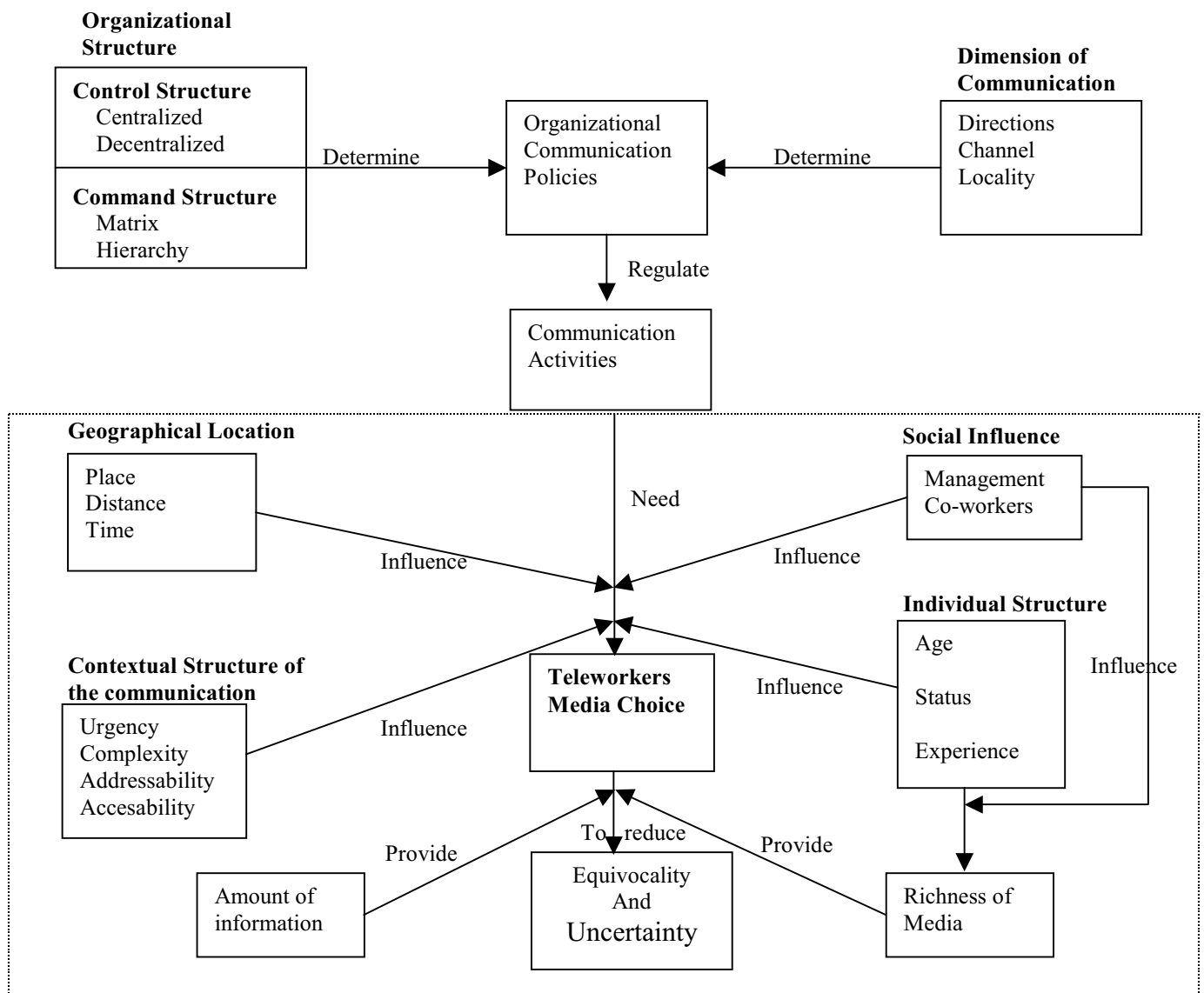


Figure 1. A Structure of Influential Factors in Telework Communication

The Figure 1 shows the structure of influential factors in telework communication and Figure 2 shows the structure of non-telework communication. Factors outside the dotted lines shown in Figure 1 do not have significant differences in between telework environment and non-telework environment. The rest of this section explains Figure 1, and each paragraph describes a component of Figure 1.

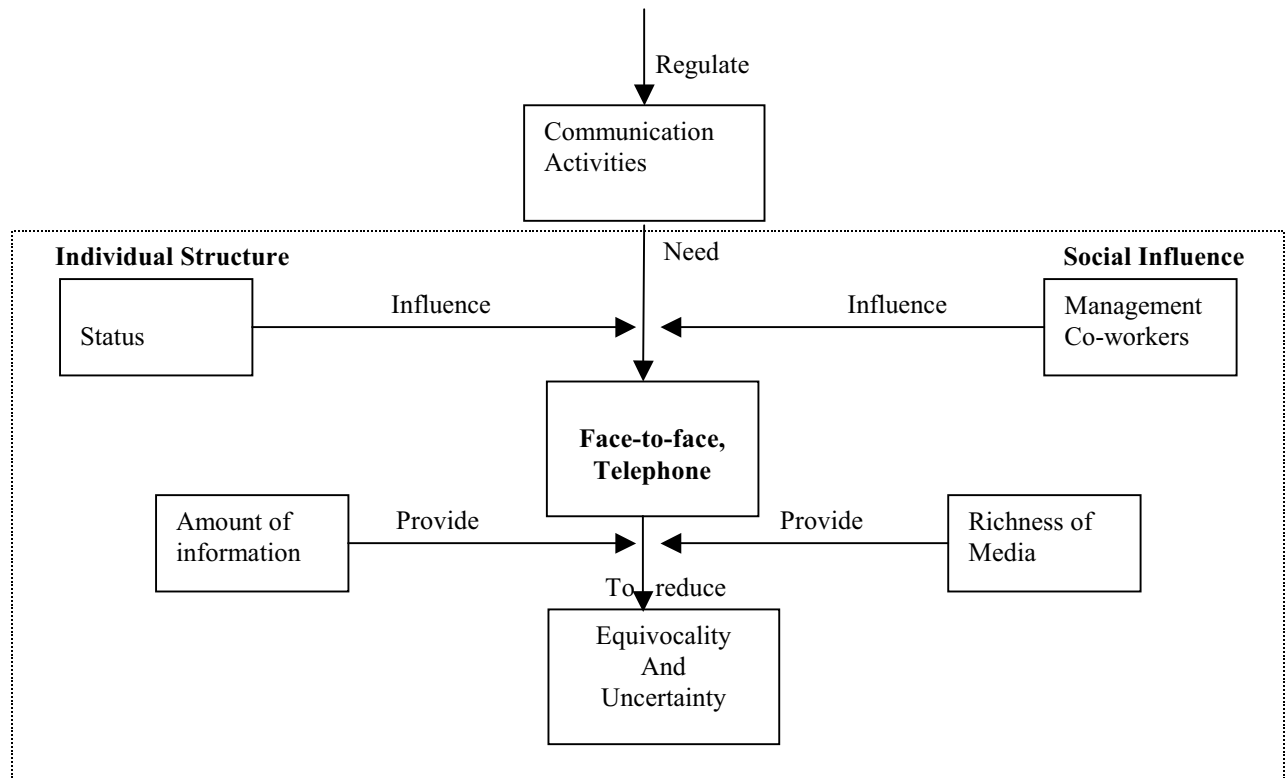


Figure 2. A Structure of Influential factors in Non-telework Communication

4.1 Amount of information and uncertainty

Information is communicated through symbols and languages that are used to interpret situations and adjust behaviors. Information processing has two main purposes: reduce equivocality and uncertainty in decision-making. The main reason for uncertainty is the inadequacy of information, and uncertainty is defined as the difference between the amount of information required to perform a job task (or making a decision) and the information already possessed by the organization. As information increases uncertainty decreases. Therefore, when the uncertainty is high, organizations need to acquire more information to reduce the uncertainty thereby improving the decision making process. According to Daft et al. (1988) the level of strategic uncertainty reflects the strategic value of information for organizational performance. Therefore, they proposed that when the strategic uncertainty is high, managers tend to acquire more information in order to enhance the decision-making. There is no change to this in the telework settings as well. Teleworkers too need more information in order to reduce uncertainty in their job tasks.

4.2 Media richness and equivocality

Equivocality is the existence of multiple and conflicting interpretations of a job task or in any organizational situation. Equivocality often arises due to a lack of understanding, confusion,

and disagreement among workers/managers. According to Hart and Rice (1991) more complex job tasks that are non-routine and un-analyzable involve processing highly equivocal information and need different approaches to information processing. On the other hand task that are routine and analyzable involve processing less equivocal information and need less information processing compared to complex job task. To support the media selection for different equivocality levels, Daft and Lengel (1986) proposed the media richness theory. Here they argued that media richness and message equivocality are positively correlated in management communication. Further, this theory says that equivocal communication cannot be handled in the same way as uncertainty reduction because unlike uncertainty, in the case of equivocality, data are un-analyzable. It is considered that equivocal information processing is much more difficult in telework settings compared to single office settings due to a lack of face-to-face communication. Therefore, equivocality reduction is one of the key objectives of media selection in telework.

4.3 Communication policies

Organizational communication regardless of the work style is a complicated task, which is determined by various factors. In any organization, organizational communication is regulated by organizational communication policies. The main objective of the organizational communication policies is to encourage certain communication patterns among employees. Then communication can be structured within the organization so that members can perform their jobs as efficiently and effectively as possible. Communication policies provide guideline for decision as to why, what, when, who and how to communicate (Mcfarland, 1968).

4.4 Organizational structure and Dimension of communication

Communication policies vary depending on the organizational structure and dimensions of the communication (Mcfarland, 1968). Organizational structure is based on two main characteristics, control structure and command structure of the organization. The control structure determines the general principle of managerial delegation of authority, which can be centralized or decentralized. The command structure describes the management and operation assignment, which can be hierarchical or matrix. Dimensions of communication can be described using three factors, direction, channel, and locality of the communication task. The direction of communication flow includes three communication directions: upward, downward, and lateral communication. Communication channels are categorized as formal and informal. A formal communication channel facilitates managerial communication activities through the chain of command. An informal communication channel facilitates personal communication activities in the informal organization within the formal organization. The locality dimension of a communication activity has two types: internal and external communication activities.

4.5 Geographical location

Geographical location is the person's physical position in time and space. In order for people to communicate face-to-face, they must be in the same geographical location. Communication through some other media such as telephone, email, teleconferencing etc. does not require communication parties' to be physically present in the same location. However, large time zone differences between the communication party's geographical locations may constrain communication through some of the media. Not only the graphical location, even distance between communicators too influences the media selection of

teleworkers (Wijayanayake and Higa, 1999). Specially, in the case of telephone, the cost of communication increases with the geographical distance between communication parties. But on the other hand email is a cheaper communication media for long distance communication. Hence, cost factors of the communication media make distance between communication parties an influential factor of media choice in telework.

4.6 Social influence

Fulk et al., (1987) proposed a social influential model in which the media choice of individuals is believed to be influenced by those of their superiors and co-workers. The model says that the use and consequence of information technology for communication emerges from complex social interactions such as peer pressure, group communication culture, and organizational influence. They proposed the properties of any media vary from one individual to another, and from one social context to another. Hence, a person's use of a media rather than another for a particular kind of communication is not only the influence of that person's own rationality, but also the influence of management and group norms, influence of other individuals, and the influence of other extra rational factors. Shin et al. (1998) suggests that even lean media with low information richness can be used effectively for communication in telework by changing the group norms of workers and with management support. Markus (1994) argued that the nature of the social relationship between communication groups influence the media selection. She found that email was used as the primary medium for internal work related communication, and telephone was used as the primary medium for maintaining social relationship at work. It is confirmed that sponsorship and support by key members of an organization for new technologies such as email, legitimize the use of that technology and promote their diffusion and adoption (Markus, 1994). Furthermore, fast communication requires that communicators respond quickly to the communications others initiated, making the pattern of responsiveness by co-workers one of the influential factors of media choice. For example, if teleworkers do not reply to email or do not pickup the phone when it rings, communication will be slow, no matter how fast the media is.

4.7 Contextual structure of the communication

The time available for decision-making in a job task varies from job to job and situation to situation. Deadlines for decision making dictate the amount of time available for communication and information access (Higgins, 1999). Different media has different level of communication speeds. For example, face-to face communication, telephone, and teleconferencing take place at a greater speed compared to e-mail and fax. But hard copy memos and letters are very much slower compared to e-mail and fax. Sillince (1997) suggests that there is a relationship between media speed and message urgency. Wijayanayake and Higa (1999) reported that telworkers use telephone more for urgent communication task than e-mail. From the above discussion, it is clear that the urgency of the communication task can be considered as an influential factor of media choice.

According to Nakamura et al. (1995) there are different complex levels of communication tasks. In ascending order of complexity, they are report, inquiry, work coordination, discussion, and negotiation and persuasion. Communication tasks high in complexity, such as settlement of a dispute, require rich information. Tasks low in complexity, such as providing a sales data, do not require rich information. According to Daft and Lengel (1984) communication media vary in their ability to carry rich information. The reasons for richness

differences are the media's capability for immediate feed back, number of cues utilized for communication, personalization, and language variety. Lean media lack adequate support for high complexity tasks and rich media have more than enough capacity for low complexity tasks. Therefore, appropriate media choice in telework, that is the selection of media that matches the complexity level of the communication tasks will lead to the improved efficiency and effectiveness.

Multiple-addressability, the ability to reach many people simultaneously, of electronics communication media gives new definition for organizational supervision (Sillince, 1997). Wijayanayake and Higa (1999) found that teleworkers who use mainly email for communication had lesser number of face-to-face meetings than teleworkers who use mainly telephone for communication. According to Sillince (1997), computer mediated communication is the most democratic media which provides many to many communication without much influence from the management, where as face-to-face communication provide one-to-one and one-to-few communication with leader influence. Saunders and Jones (1990) suggest that information search begins with the most accessible sources. However, they argue that the selection of media primarily based on accessibility may lead to reduce information accuracy. Markus (1994) argues that if multiple addressability and information searchability were added to the concept of information richness, email would have exceeded the richness level of traditional communication media like telephone. Specially, in the case of telework communication, addressability and searchability are very important as co-workers are geographically distributed. These two functions of new communication media play a vital role in supporting teleworkers to find information and to clarify ambiguities in work related activities.

4.8 Individual structure

Organizational position is defined as the person's location in an organizational department and hierarchy. Status differences occur widely among member of organizational groups, which usually consist of a variety of positions. When groups communicate to arrive at decisions, higher status individuals tend to control the communication and exercise more influence thereby creating status effect (Tan et al., 1998). Excessive status effect influences communication adversely and therefore suggests that balance of status effect is appropriate for effective group communication. According to Sproull and Kiesler (1986), status difference will not constrain communication if sender and receiver are unaware of the status difference. Fulk et al. (1987) argue that leaner media is used relatively less frequently at senior management level because senior level management deal with highly complex tasks which require rich communication. Media selection is influenced by either hierarchical positions or by argumentational skill of individuals (Sillince, 1997). When people have argumentational skills, they tend to select face-to-face communication over other media when they are in the same location. However, the situation is different in telework settings. Opportunities for face-to-face communication are limited, and instead teleworkers have to choose from other media that support most to show their argumentational skills and create status effect.

It has been suggested that experience in media use (Wijayanayake and Higa, 1999) and age of worker (Shin et.al, 1998) are influential factors of media choice in telework. In general, younger people prefer, and are quicker to adopt new technologies than what older people are. Further, to learn new technologies, a considerable amount of time, energy, and effort are needed, and older people may not be willing to sacrifice their time and energy for such tasks.

Therefore, the use of new sophisticated communication technologies may be lower among older teleworkers compared to younger teleworkers. According to Jarvenpaa and Ives (1994), knowledge of the workers is one of the factors that influence the adoption of new technologies. Further, technical knowledge and skills can be individualized through experience, and when they are individualized, they will become more common in use.

Each of the components discussed can be integrated to form the communication environment for a telework organization. Figure 1 shows the relationship between the components in the communication environment in telework. This framework shows that communication in the telework environment is different from a single office environment. In the traditional single office environment employees have limited number of media to choose, mostly between either face-to-face or telephone. Further, they do not need to worry much about media selection as always they have the option of using the richest media, that is face-to-face whenever they want. Therefore, there are less influential factors of media choice in single office environment, compared to telework environment. However, as there are fewer opportunities for face-to-face interaction in telework, unlike traditional single office workers, most of the time teleworkers have to select the best-suited media to carry out their communication tasks. This selection of media in telework is influenced by various factors as shown in Figure 1 and makes it difficult for teleworkers to do the correct selection. Not only teleworkers, even administrators find it difficult to provide the correct mix of media to support better communication. At the moment, organizations with telework arrangements are facing mainly two problems. The first one is insufficient communication support, and the other is unnecessary or over support. However, appropriate media selection, which is the selection of media that matches the communication task, is very important in that too little support may result in miscommunication, and on the other hand, too much support is likely to be wasteful.

5. Discussion

The primary objective of communication is to reduce equivocality and uncertainty of the job and decisions around it. If improper communication has taken place, the decisions that are made based on incomplete or improper communication may result in failures or incomplete jobs. This may lead to reduction of workers' productivity, and negatively affect the overall business performance of the organization. Therefore, selection of correct media for communication plays a vital role in the success of telework arrangement. However, selecting the communication media is not as simple as one might think. There are so many factors, from organizational structure to social influence, which influence the media selection. Therefore, careful planning and changes in management practices, the support systems, and business process in order to suite the telework environment is necessary for success of a telework arrangement.

All the factors that influence organizational communication are closely related. For example, organizational structure is coupled with communication dimensions, and organizational structure and the dimension of communication determine the organizational communication policies. Organizational communication policies are one of the factors that controls organizational communication. From this explanation it is clear that efficient and effective organizational communication activities are determined by organizational structure and communication dimensions and policies. However, changes to these factors cannot be made in an ad-hoc manner. Top management's consent is necessary as changes to these important factors affect the whole organization. On the other hand if changes are made in an ad-hoc

manner, it is eminent that there will be a reduction in the effectiveness of internal process of the organization due to communication problems. In fact, the fear of the erosion of internal process is one of the reasons for management resistance of telework adoption, despite its potential benefits (Kraut, 1989). Bad experience from unplanned teleworking, which was implemented without making changes to the supportive systems and organizational policies, was one of the reasons for this management resistance and fear. Further, Shin et al. (1997) suggest that improvements to the internal process would provide solutions to the side effects of telework such as the feeling of isolation, role conflicts, ambiguities, coordination, control and supervision difficulties of telework. Therefore, making changes to organizational structure and communication dimensions and policies to improve the communication between teleworker and management will improve not only the internal process but also some side effects of teleworking as well. Eventually, this will lead to the successful implementation of a telework arrangement. The first step toward achieving this goal would be accepting telework by top management as a reengineering process of the organization. Unless this recognition is made, aforementioned changes cannot be effectively made, as those changes require top management's support.

One factor that influences media selection in telework is social influence such as management support and co-workers' media use. This implies that given sufficient social influence with the communication media, teleworkers would find considerable similarities in perception and use of that particular media. Furthermore, our framework shows how individual structure of the user influences in deciding the richness level of media. Richness level of media is not remaining constant regardless of any differences in the individuals as stated in information richness theory. It varies according to individuals' perception in media. Individuals' perception varies depending on personal characteristics and social influence. Further, communication requires people to act together and there are many factors that affect media use in addition to individual factors.

Based on the aforementioned discussions, urgent research needs in this field are:

- Developing a mechanism to match media with communication task.
- Study on how management practices, support systems, and business processes should be changed to support teleworking.
- Evaluation of effects on changes to management practices, support systems, and business processes on teleworkers' productivity.
- Study on what type of support is needed from the top management for successful implementation of telework.
- Study on how communication policies should be changed to suit the telework environment.
- Study on how media selection affects teleworkers' productivity and efficiency.
- Study on how social experience would help to make the correct media choice in telework communication.
- Study on what type of social influence can change the individual perception on media.
- Study on how individual characteristics would affects media selection.

6. Conclusion

As more and more organizations adopt distributed work arrangements, we need to develop new theories in order to help IS professionals who develop and manage information technology to support organizational communication. In this paper we attempt to present a unified view of the organizational communication environment in telework, and influential

factors of media selection. In the proposed framework, we argued that the objective of communication is to reduce equivocality and uncertainty in decision-making and explained why selection of media is very important in telework. Using the framework we discuss why considering telework as a re-engineering process of the organization is important for the success of the telework arrangement. The communication framework reveals that telework communication related research areas are largely untouched. Lastly, some of the variables discussed in this paper have not been empirically validated in the telework environment. Therefore, further study is necessary to validate those variables through empirical test.

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